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F3C

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(54) Airguns

(57) High performance air rifle or other airgun is provided with an action assembly (11) including the stock, trigger mechanism, cocking mechanism and air cylinder and provided with a barrel mounting formation (14) including a bore (15) in which the breech end of the barrel (10) of the gun is a close sliding or push-fit, the barrel being releasably secured in place in accurate alignment with the assembly (11) by a pair of pinch bolts (19). This enables different barrels to be inter-changed while maintaining their accurate alignment with the assembly (11) and with a sight (20) mounted thereon.

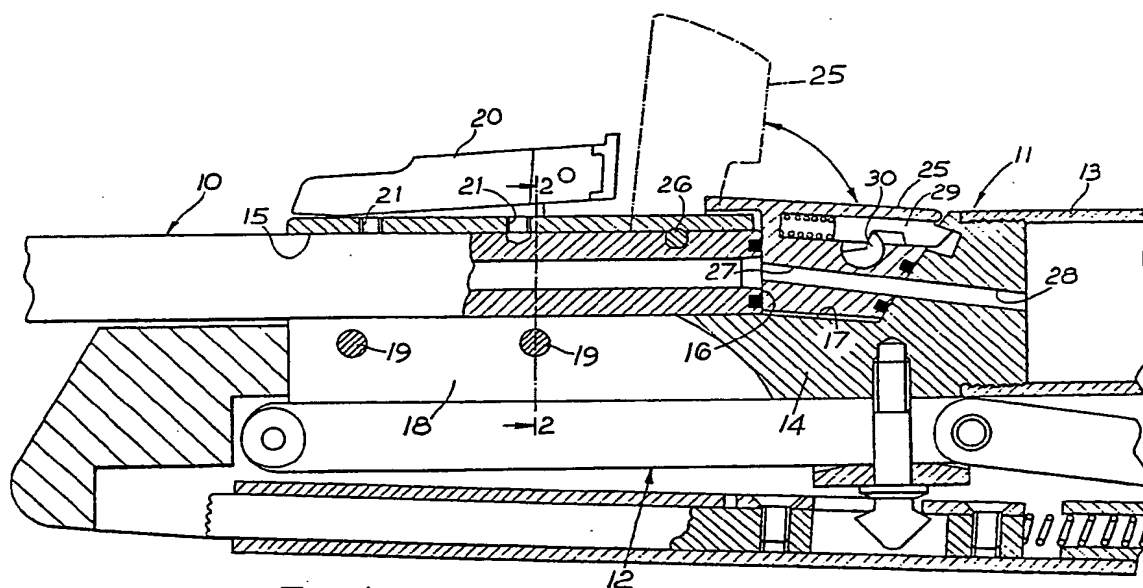
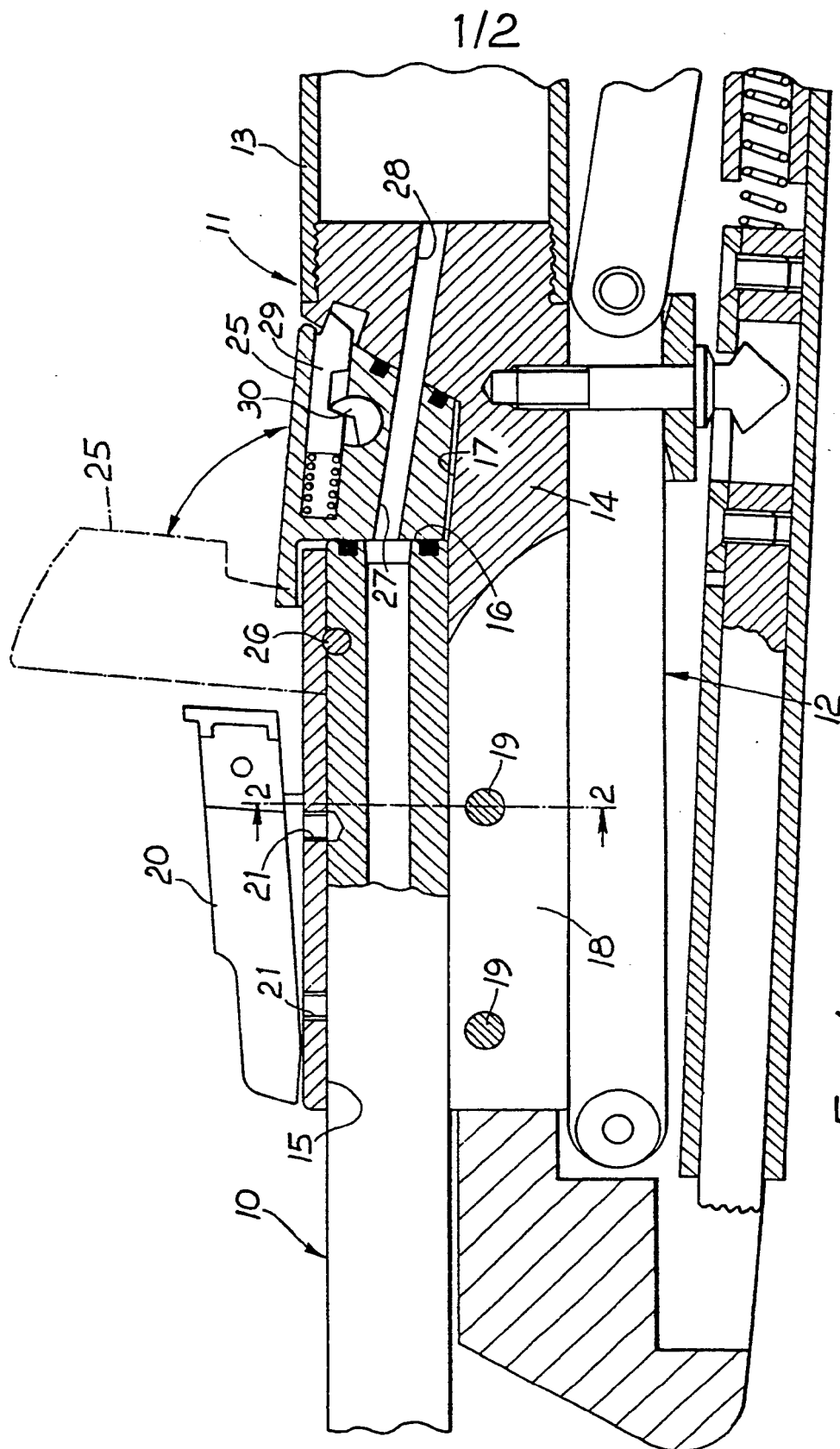


Fig. 1

The drawing(s) originally filed was (were) informal and the print here reproduced is taken from a later filed formal copy.
The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1982.

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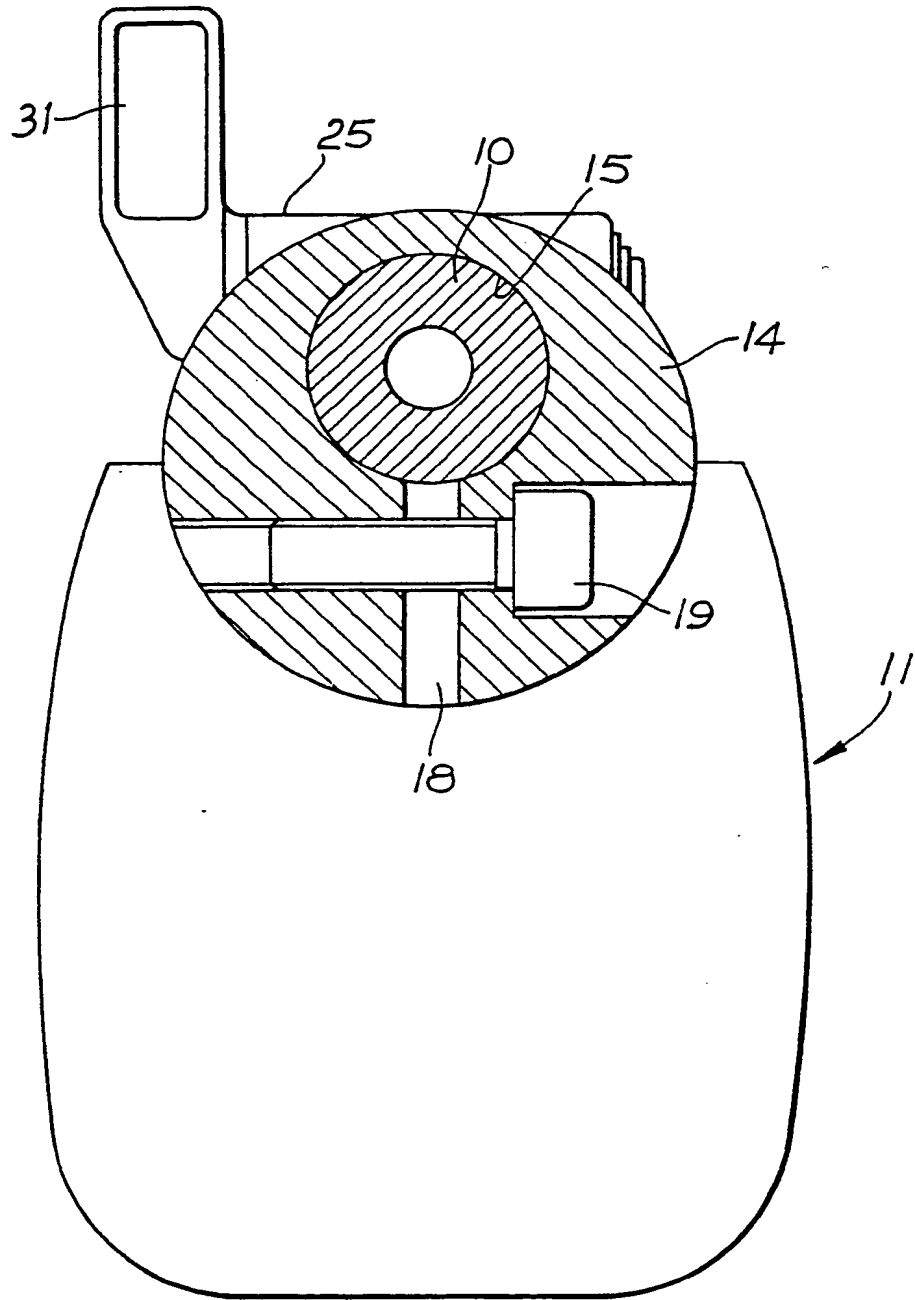


Fig. 2

SPECIFICATION

Airguns

5 This invention relates to spring-energised high-velocity airguns, particularly but not exclusively quality high-performance air rifles, of the kind operated by a piston which compresses air in a cylinder by spring action so as to eject a projectile from the barrel of the
10 gun, the gun including cocking mechanism enabling the user to move the piston to a cocked position ready for release, and trigger mechanism including retaining means for holding the piston at the fully cocked position until the trigger mechanism is actuated by
15 the user to discharge the gun. Guns of this kind are hereinafter referred to as "piston airguns".

Said guns comprise the barrel and an assembly (hereinafter referred to as "the action assembly") comprising an attachment or mounting for locating
20 the barrel, said cylinder and energising spring means, said cocking and trigger mechanisms, and a stock.

The object of the invention is to provide a piston airgun which is economical to manufacture and distribute and which is adaptable and convenient in use,
25 and is durable, capable of high performance with great accuracy, and readily serviced and maintained.

According to the invention there is provided a piston airgun including a barrel and an action assembly, said assembly including a rigidly located barrel
30 mounting formation defining a longitudinally extending opening in which a breech end portion of the barrel is a close sliding or push fit and clamping means for releasably urging parts of said formation into gripping engagement with said end portion.

35 Conveniently a portion of said formation is split along its length and said clamping means includes one or more pinch bolts acting to deform said split portion into said gripping engagement.

Preferably there are at least two pinch bolts longitudinally spaced from each other to ensure that the
40 breech portion is gripped at at least longitudinally spaced locations to preclude any possibility of lateral rocking movement of the barrel and to ensure its accurate axial alignment with the action assembly.

45 Said barrel mounting formation may operatively carry sighting means, for example a backsight used in conjunction with a foresight carried on the fore end of the barrel or a telescopic sight, said mounting of the barrel ensuring that the alignment of the sighting
50 means is maintained in use yet permitting interchangeability of barrels, for example to provide a gun having a selected one of a range of calibres using a common action assembly.

The gun incorporating the invention may be a high
55 velocity match, target shooting or sporting rifle and will preferably include a piston and cylinder assembly having a fluid seal as described and claimed in our British patent 2051321, and/or trigger mechanism as described and claimed in our co-pending British patent application 8429598 dated 23rd November 1984,
60 and/or under lever cocking mechanism, and/or direct loading into the breech of the operatively fixed barrel by means of a flip-up loading shoe and preferably includes all the features referred to in this paragraph
65 in combination.

An example of the invention is now more particularly described with reference to the accompanying drawings wherein:-

Figure 1 is a longitudinal sectional view of the
70 breech area of a high velocity air rifle and *Figure 2* is a lateral sectional view on line 2-2 of *Figure 1*.

The rifle includes a barrel 10 (fore end portion shown broken away) and an action assembly 11 (rear part shown broken away) including a stock (not shown), trigger mechanism as described and claimed in our said patent application 8429598 (not shown) under lever cocking mechanism indicated generally at 12 (part only shown) and a piston and cylinder
80 assembly 13 (fore end of cylinder only shown and piston and actuating spring not shown) of the kind described in our said patent 2051321.

Assembly 11 further includes a barrel mounting formation in the form of a metal housing 14 forming an integral rigid portion of assembly 11 fast with the air cylinder. A forward part of housing 14 defines a longitudinally extending bore 15 in which the periphery of the breech end portion of barrel 10 is a close sliding or push fit, the breech end face 16 of the
90 barrel locating at the front of a loading notch 17 formed in the upper rear part of housing 14 and referred to further hereafter.

Housing 14 is generally cylindrical as best seen in *Figure 2* and the axis of the mounted barrel is offset
95 upwardly of the central axis of the housing. The forward part of the latter is slit at 18 so that the lower portion is split into two halves and a pair of pinch bolts 19 on longitudinally spaced axes can be tightened to deform the split portion of the housing into tight clamping engagement with the barrel. While a single pinch bolt or other clamping means might be employed the longitudinal spacing of the two bolts ensures that the barrel is tightly held with its axis in true longitudinal alignment with assembly 11 and
100 that it cannot rock sideways in housing 15.

In this example a backsight 20 is mounted on the top of the forward part of housing 15 by a pair of screws (not shown) received in bores 21 of housing 15 and these may extend into shallow locating bores
110 in barrel 10 to help to ensure its accurate longitudinal location in the housing bore 15.

As the gun has no break action, the barrel being operatively rigidly fixed as referred to above, loading means is provided comprising a flip-up loading shoe
115 25 which is pivoted on a transverse pin 26 in housing 15 whose bore intersects and passes through an upper peripheral portion of the barrel 10 further ensuring its accurate longitudinal location.

Shoe 25 includes a downwardly tapered portion
120 which is urged into tight sealing engagement between the breech end face 16 of barrel 10 (which is provided with an airtight sealing ring) and a sloping rear face of notch 17. A further airtight sealing ring is provided in the mating face of shoe 25 so that a
125 through passage 27 in the shoe forms a fluid-tight connection between the bore of barrel 10 and a further passage 28 extending from notch 17 to the forward end of the air cylinder. The shoe 25 is held in place by a spring loaded longitudinally sliding catch 29 having
130 a pawl shaped end which engages a recess 30 open-

ing into notch 17.

Catch 29 can be released by turning a rotary cam 30 operated by a small lever 31 (Figure 2) carried on the shoe enabling it to be flipped forward about pivot pin 5 26 to the position shown in broken lines in Figure 1 enabling a pellet or other projectile to be positioned directly in the breech of barrel 10, thus avoiding any possibility of jamming or damage to the projectile which sometimes occurs where indirect loading 10 mechanisms such as rotary taps are employed where there is no break action.

While barrel 10 is rigidly held in extremely accurate alignment with action assembly 11 when the gun is in service forming a very durable and reliable assembly, 15 barrels can readily be interchanged or replaced if required by removing pin 26 and any screws in bores 21, slackening the pinch bolts 19, and drawing barrel 10 forward out of housing 15.

In this way using a standard action assembly, rifles 20 of various calibres may be provided either at the time of manufacture by selecting the appropriate barrel according to requirements for final assembly; or by a stockist e.g. to suit a particular customer's requirements without having to carry a range of costly complete rifles of the various calibres; or by the user of the 25 gun e.g. if he decides to change calibres for different purposes or requirements. Similarly if a barrel should require replacement e.g. due to accidental damage the substitution can be quickly and accurately made and the gun restored to service without the need for 30 costly and skilled rebuilding, assembly or alignment.

For example a standard high grade high velocity action assembly having all the preferred features referred to above may be provided with a 4.5 mm 35 (.177") Olympic match standard barrel mainly for target use, or a 5.5 mm (.22") calibre barrel which may be preferred for sporting use, or an intermediate calibre such as 5mm (.2") which has recently come into wider use. The invention enables varying demands for the different calibres to be met speedily 40 and simply and with minimum outlay on stock both by the manufacturer and the stockist or retailer.

CLAIMS

45

1. A piston airgun including a barrel and an action assembly, said assembly including a rigidly located barrel mounting formation defining a longitudinally extending opening in which a breech end portion of 50 the barrel is a close sliding or push fit and clamping means for releasably urging parts of said formation into gripping engagement with said end portion.

2. An airgun as in Claim 1 wherein said clamping means acts to grip the breech portion at at least longi- 55 tudinally spaced locations of the mounting formation.

3. An airgun as in Claim 1 or 2 wherein a portion of said formation is split along its length and the clamping means includes one or more pinch bolts acting to 60 deform said split portion into said gripping engagement.

4. An airgun as in Claim 3 wherein there are at least two pinch bolts longitudinally spaced from each other.

65 5. An airgun as in any preceding claim wherein

the barrel mounting formation includes means for mounting sighting means thereon.

6. An airgun as in Claim 5 wherein said sighting means is a backsight for operative use in conjunction 70 with a foresight carried on the fore end of the barrel.

7. An airgun as in Claim 5 wherein said sighting means is a telescopic sight.

8. An airgun as in any preceding claim being a high velocity match, target shooting or sporting rifle.

75 9. An airgun as in any preceding claim including underlever cocking mechanism.

10. An airgun as in any preceding claim including provision for direct loading into the breech of the 80 operatively fixed barrel by means of a flip-up loading shoe.

11. An airgun substantially as hereinbefore described with reference to and as shown in the accompanying drawing.

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